

other elements in the change groups themselves is a clear need. The very wide range of success across the groups we studied may be in part an artifact of small numbers and random events. There is good reason to believe, however, that there are such things as effective leaders and effective groups. Characteristics of leaders, such as their previous experience, their own status as ex- or never-smokers, and characteristics of groups, such as their size, homogeneity, social composition, and quality of interaction, are more than theoretically interesting. If the 30 percent quit rate ceiling that is widely reported in formal clinic programs is to be pierced, further study of the groups themselves seems called for.

**References**.....

1. Fiore, M. G., et al.: Methods used to quit smoking in the United States, do cessation programs help? *JAMA* 263: 2760-2765, May 23-30, 1990.

2. Prevention profile. Health United States, 1989. Publication No. PHS 90-1232, National Center for Health Statistics, Hyattsville, MD, 1990.

3. Lando, H. A., McGovern, P. G., Barrios, F. X., and Etringer, S. D.: Comparative evaluation of American Cancer Society and American Lung Association smoking cessation clinics. *Am J Public Health* 80: 554-559 (1990).

4. Bertera, R. L., Oehl, L. K., and Telepchak, J. M.: Self-help versus group approaches to smoking cessation in the work place: eighteen-month follow-up and cost analysis. *Am J Health Promot* 4: 187-192 (1990).

5. Norusis, M.: SPSS/PC+ V.2.0 base manual. SPSS Inc., Chicago, 1988.

6. Petitti, D., Friedman, G., and Kahn, W.: Accuracy of information on smoking habits provided on self-administered research questionnaires. *Am J Public Health* 71: 308-311 (1981).

7. Schwartz, J. L.: Review and evaluation of smoking cessation methods: United States and Canada, 1978-1985. NIH Publication No. 87-2940, National Cancer Institute, Bethesda, MD, April 1987.

8. Etringer, B. D., Gregory, V. R., and Lando, H. A.: Influence of group cohesion on the behavioral treatment of smoking. *J Consult Clin Psychol* 52 :1080-1086 (1984).

**The Uncounted Dead—American Civilians Dying Overseas**

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**Synopsis**.....

*The Federal Government, U.S. physicians, their patients who travel, insurance companies, the travel industry, and multinational corporations should know the health hazards facing Americans over-*

*seas. However, the deaths overseas of almost 5,000 Americans every year have never been analyzed.*

*A previously unreported, unexamined data source is analyzed by cause, sex, age, length of stay, and country of death of Americans dying overseas. The major findings are*

- 1. Most Americans who die overseas die in the developed countries of Western Europe, where most Americans live or visit. The patterns of deaths in these countries are similar to death patterns in the United States.*
- 2. Surprisingly, the deaths of Americans in less developed countries are not from infectious and tropical disease, as many health professionals would expect, but are from chronic diseases, injuries, suicides, and homicides.*

*The importance of these findings for the Federal Government, travelers' clinics, insurance companies, multinational corporations, and Americans living and traveling overseas is discussed.*

Approximately 5,000 Americans die overseas each year. These deaths are not recorded or analyzed by the National Center for Health Statistics (NCHS)

according to a personal communication from Dr. Harry Rosenberg, Division of Vital Statistics, NCHS, in October 1986. These deaths are, how

ever, reported to the U.S. Passport Office by the Consular Representatives of the United States in the various countries of the world.

A literature search using the Medline base revealed only one reference on deaths of Americans overseas. It was limited to Peace Corps Volunteers (1). Apparently data on the deaths of all civilian Americans who died overseas have never been analyzed. Therefore, the analysis of these deaths, even though based on some approximations, should be of value to the Public Health Service, the State Department, practicing physicians and their patients who travel, the U.S. travel industry, travelers' clinics, the insurance industry, multinational corporations, and epidemiologists and vital statisticians in the United States.

### Sources of Data

**Numerator data.** With the help of Ms. Jane Hayes of the Passport Correspondence Branch, Department of State, we examined 2 years of records of Americans dying overseas. Deaths of U.S. citizens overseas are reported to U.S. consuls by local authorities. U.S. consuls send reports of the essential information on the death certificates of U.S. citizens who die overseas to the U.S. Passport Correspondence Branch, where the death registers are available for more than 10 years. Essentially all deaths are reported, with the exception of American deaths that are not known even to the local authorities. The files also exclude deaths of U.S. military personnel.

We used data on the earliest year, 1975, and the most recent year available, 1984. There is a long lag in completing collection of the certificates from all countries. There was also delay in our analysis as our study was self-funded. Subsequent, well-funded studies could produce more current information.

There were 5,453 deaths in 1975 and 4,677 in 1984. Since there were approximately five times as many deaths in the 60-year and older age group as in the younger ages, we used a 20 percent sample of the more than 60 age group and all deaths at ages younger than 60. We observed some variation in the nature of reporting among countries. Some had mostly physicians reporting; others had mostly civil registrars reporting.

**Denominator data.** The number of Americans overseas as travelers (permanent residence in the United States) or as residents (permanent residence abroad) is not precise. We derived information on Ameri-

can residents overseas (970,000 in 1975 and 1,156,000 in 1984) from consular reports from all countries where the United States maintains consular offices or has third country representatives (2). According to the U.S. Passport Office, this information may be underreported, as the consular offices have no way of directing censusing Americans living overseas. They report on those of whose existence they are aware, plus estimates of unregistered Americans. Completeness of information varies from country to country.

The information on travelers overseas (173,000 person years in 1975 and 274,000 in 1984) has been taken from the World Travel and Tourism Statistics yearbooks, 1975 and 1984 (3). A second source of information on the number of travelers was obtained from the Pacific Area Travel Association (4). This permitted comparison with Asian countries listed in the World Travel and Tourism Statistics yearbook.

Age distribution of travelers was obtained from the U.S. Department of Commerce publications based on a survey of travelers (5). Unfortunately, the survey is not specific for countries or even regions. To estimate the numbers of residents returning home to die, we used unpublished data from the NCHS tapes on deaths in the United States of non-U.S. residents.

### Methods

Cause of death, country of death, age at death, sex, medical certification, place of death, resident or traveler status, and occupation were abstracted from State Department consular death reports using a portable microcomputer. Names and original residence in the United States were eliminated to preserve confidentiality. The death information was prepared in Statistical Package for Social Sciences (SPSS) format for analysis and cross-tabulation.

The coding was done by greatly condensing the 9th revision of the Manual of the International Statistical Classification of Disease, Injuries and Causes of Death (ICD) (6) for both of our study years. Since many reports lacked details on cause of death, we used the following categories: infectious disease (ICD I), neoplasms (II), circulatory system (VII), injuries (XVII), all other diagnoses and ill-defined (XVI).

**Classification of countries.** For comparison of developed and less developed countries, we used 1983 data from the World Bank to divide countries into less developed countries and developed countries

(7). A \$2,000 per capita Gross National Product (GNP) was established as the basic dividing line between less developed countries and developed countries. This cut-off point was modified by classifying all countries whose male population had a life expectancy of less than 65 years as "less developed."

We used economic criteria to categorize countries, since many deaths of the citizens of poor countries are from infectious or tropical diseases—unlike deaths in the United States and Western Europe. We modified the economic criteria to categorize as "less developed" several countries with greater than \$2,000 per capita GNP that have health characteristics of poor countries.

**Exclusions.** Mexico and Canada were eliminated for all rate calculations as their borders with the United States are so permeable that both death and population data require special analysis. However, overall numbers of deaths in Canada and Mexico are included in the total deaths reported.

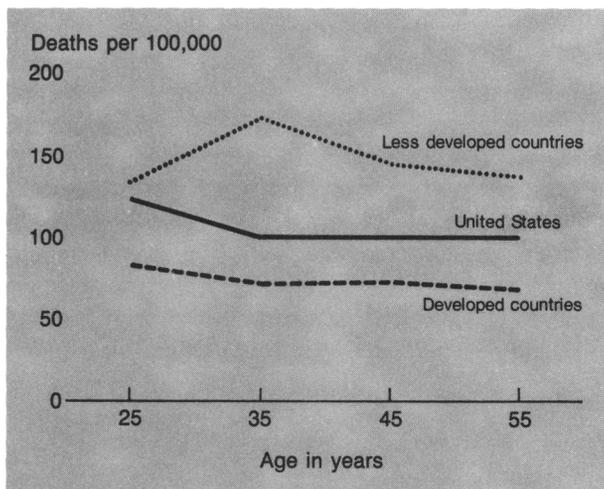
Military personnel were excluded from both deaths and the denominator population. However, other government employees and their dependents and military dependents are included.

**Denominator estimation.** To estimate the age and sex distribution of the U.S. resider population overseas, we applied U.S. total age and sex specific death rates to resider deaths for each age (25–75 years) and sex component. The resulting component populations were used to calculate cause-specific death rates. This procedure is similar to the composite method suggested by the Bureau of the Census to estimate population components of unknown size (8).

Age and sex denominator distributions for travelers were calculated from the Department of Commerce survey of travelers. Annual exposure was calculated by multiplying the number of travelers by the average nights per traveler (by country), divided by 365. Thereby, an estimate of the person-years of exposure is available for each country.

**Estimate of "residers" returning home to die.** To estimate the number of U.S. citizens residing overseas who came home to die, we used unpublished data from the NCHS. Citizenship was not reported on these tapes. Therefore, we used "U.S. as place of birth" as a proxy for citizenship. We added these deaths of U.S. citizens residing abroad, but dying in the United States, to the deaths of residers overseas. We were not able to make a similar

Figure 1. Injury death rate for male U.S. citizens



correction for U.S. travelers who return home to die.

## Results

From the 10,000 deaths analyzed, the major findings are these:

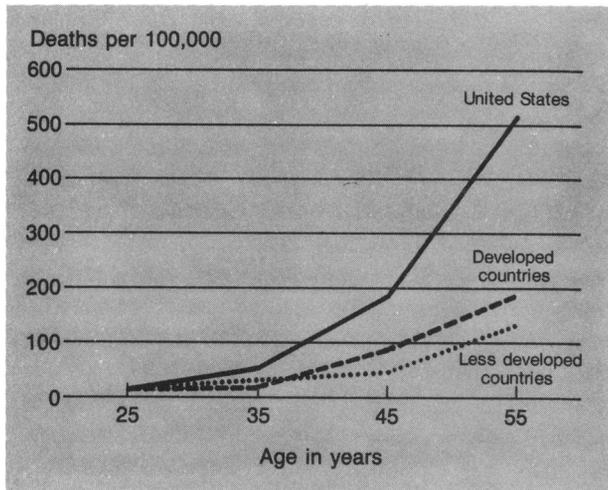
**Number of deaths.** Deaths from infectious diseases were expected to be a major category of mortality, particularly in the less developed countries of the world where Americans lived or traveled. However, there were only 169 deaths (including expansion of the over age 60 sample) in the ICD I classification "Infective and Parasitic" out of a total of 10,000 or more deaths for 1975 and 1984. In 1975, there were 92 infectious disease deaths; in 1984, there were 77 (less than 2 percent of all deaths for both years).

For 1975 and 1984 combined, there were 39 infectious disease deaths in less developed countries (2.3 percent of all deaths in less developed countries). There were 130 infectious disease deaths in developed countries (1.5 percent of all developed-countries deaths). The overall numbers of deaths from infectious disease were too small to calculate age-adjusted rates.

There were few "tropical disease" deaths. We found only five deaths from malaria, typhoid fever, and leptospirosis. In contrast, three deaths attributed to malaria acquired overseas occurred in the United States in 1986 (9). There was one recorded American death overseas from acquired immunodeficiency syndrome in 1984.

**Death rates.** As expected, the mortality rates of American females overseas were lower than the

Figure 2. Cancer death rate for male U.S. citizens



Death rates (per 100,000) for American men dying in developed countries and the United States

Disease	Age	United States (1982)	Developed countries (1975-84 average)
Neoplastic	45-54	185	61
	55-64	523	153
Circulatory	45-50	301	244
	55-64	809	585

rates for males for all diagnoses, particularly deaths from injuries which had an appreciable number of deaths and for all age groups. Death rates decreased from 1975 to 1984 as would be expected from the worldwide decrease in mortality rates. Travelers' crude death rates (9.1 per 1,000) were higher than residents' crude death rates (7.6 per 1,000).

Death rates for injuries were greater than anticipated. By combining data for travelers and residents in 1975 and 1984, we had adequate numbers for age-specific and sex-specific death rates that have stability. Figure 1 shows that the injury rates for the four male age groups from ages 25 to 65 are considerably higher in less developed countries than they are in the United States. The U.S. citizen injury rates in developed countries are somewhat lower than the overall U.S. injury rates.

Chronic disease death rates, as exemplified by rates for neoplasms and circulatory disease rates among men, are considerably lower than U.S. rates for all ages for both travelers and residents in both developed countries and less developed countries (see table). They are somewhat lower for less developed countries than for developed countries. Figure 2 shows the relationship of neoplasm rates in the United States to those for U.S. travelers in

developed countries and in less developed countries. The death rates for males from circulatory disease in developed countries are much closer to the rates in the United States for circulatory disease than for neoplasms.

Ill-defined causes of death were not as high as anticipated, particularly in less developed countries where health services are less well developed. However, the rates in less developed countries for ages 25-64 were somewhat higher than U.S. rates for all but one 10-year age group.

## Discussion

As our results section shows, the mortality distribution among the causes of death by age is quite similar to that in the United States. This differs from the reported morbidity pattern for travelers in which infectious disease plays a greater role than in mortality (10-13).

The major surprise in our data was the finding that tropical and infectious diseases were responsible for a very small part of the overall deaths, even in tropical, less developed countries. The risk of death for Americans overseas from infective diseases, particularly tropical diseases, is less than is generally perceived by U.S. physicians.

A more important cause of death is injury, primarily automobile crashes and drownings. Our findings for less developed countries corroborate the study by SWH and S. Baker on Peace Corps volunteers (1) in showing that injuries were a major cause of death in less developed countries. U.S. citizens in developed countries had a lower overall injury death rate than in the United States. The injury death rate in the United States is lower for high socioeconomic status (SES) persons (14). We assume high SES U.S. citizens are better able to afford to go overseas.

American travelers generally had higher death rates than U.S. residents. An unfamiliar environment is frequently a dangerous environment. The hazards of motor vehicle and air transport and the stresses of travel may contribute to the higher death rates of the travelers compared with the U.S. residents abroad. Knowledge of the strikingly high injury rates for less developed countries is important for physicians advising patients traveling overseas, for multinational corporations, for travel agencies, and for insurance companies.

Ill-defined deaths were lower than we expected—from a population less likely to have continuity of care. However, the distribution by country was strange. For example, Switzerland had very high

rates of ill-defined deaths of U.S. citizens. Inquiries of Swiss public health experts revealed no reasons.

Chronic disease (circulatory and neoplasm) death rates for overseas Americans may be less than U.S. rates because of the "healthy traveler-resider hypothesis," which posits that (a) chronically ill patients are less likely to travel, especially to less developed countries where health care may be perceived as lower in quality, and (b) U.S. overseas residents with chronic diseases go home, especially from less developed countries, to seek medical attention and subsequently die in the United States, thus lowering the death rates of Americans overseas (see table).

This hypothesis may explain the lower chronic disease death rate of older U.S. males overseas compared with those residing in the United States. Further support for the healthy traveler-resider hypothesis comes from the comparison of circulatory disease and neoplasm deaths. Circulatory disease, which causes more sudden, unexpected deaths than neoplasms, should have overseas rates that are closer to U.S. rates than cancer death rates overseas. Cancer patients have the chance to return home for treatment and may subsequently die in the United States. Our data confirm this relationship between circulatory disease deaths and neoplasm deaths.

## Conclusions

The U.S. Government, practicing physicians, travelers' clinics, corporations, and insurance companies (15) all need information on mortality risks to U.S. citizens abroad (16-19). The main conclusions of value concerning the health of Americans abroad follow:

1. Injuries are of even greater importance abroad than in the United States. Travelers should avoid motorcycles; small, less protective motor vehicles; and small, nonscheduled aircraft. They should use seatbelts, and they should not swim in unfamiliar waters.

2. Other major risks of death by disease overseas are much the same as in the United States. Therefore, the same preventive strategies apply: smoking cessation, abstinence or moderate alcohol consumption, testing for and prophylactic treatment of early hypertension, and maintenance of proper weight are all important.

3. Tropical diseases are not an important cause of death. However, for morbidity considerations, U.S. patients who plan to travel to tropical coun-

tries should be referred to qualified travel clinics.

4. The rich data resource in the U.S. Passport Correspondence Branch on deaths of Americans overseas should be further explored and improved in quality (20). Perhaps the experts of NCHS working in consort with the passport office would be the most effective strategy.

To ignore the deaths of Americans overseas is the equivalent to ignoring the deaths in any of the dozen smaller States.

## References

1. Hargarten, S. W., and Baker, S. P.: Fatalities in the Peace Corps: a retrospective study, 1962 through 1983. *JAMA* 254: 1326-1329, Sept. 13, 1985.
2. U.S. Department of State: Overseas citizens services. Annual report, 1975, 1984. Washington, DC.
3. World Tourism Organization: The world travel and tourism statistics yearbook, vol. 29, 1975, vol. 37, 1984, Madrid, Spain.
4. Pacific Area Travel Association: Annual statistical report 1983. San Francisco, CA.
5. U.S. Department of Commerce: Survey of travelers. Washington, DC, 1986.
6. Manual of the international statistical classification of diseases, injuries and causes of death 1975 (9th revision). World Health Organization, Geneva, 1977.
7. International Bank for Reconstruction and Development (World Bank): World development report, 1985. Oxford University Press, New York, July 1985.
8. H. S. Shryock, et al.: The methods and materials of demography, vol. 2. Bureau of the Census, Washington, DC, 1973, p. 757.
9. Centers for Disease Control: Malaria surveillance annual summary, 1986. October 1987.
10. Cossar, J.W., et al.: Illness associated with travel: a ten year review. *Travel Medicine International*, 1985.
11. Peltola, et al.: 2,665 Finnish travellers. *Scand J Infect Dis* 15: 375-381 (1983).
12. Sharp, J. C. M.: Infections acquired abroad. *Practitioner* 228: 749-753 (1984).
13. Steffen, R., et al.: Health problems after travel to developing countries. *J Infect Dis* 56: 84-91 (1987).
14. Baker, S. P., O'Neill, B., and Karpf, R. S.: The injury fact book. Lexington Books, D.C. Heath and Co., Lexington, MA, 1984.
15. "Playing dead," life insurers confront rise in faked deaths. *Wall Street Journal*, July 1, 1986, p. 1
16. Dawood, R.: Travellers health. *World Health*, December 1987.
17. Mann, J.: AIDS and the traveler. *World Health*, December 1987.
18. Dinman, B. D.: Responsibilities of corporate medical directors for health management in developing countries. *J Occup Med* 25: 757-759 (1983).
19. Reid, D., Cossar, J. H., Ako, T. I., and Dewar, R. D.: Do travel brochures give adequate advice on avoiding illness? *BMJ* 293: 1472, Dec. 6, 1986.
20. Rosenberg, H. M.: Quality of deaths certificates, comments from NCHS. *Am J Public Health* 80: 751, June 1990.